

CLAIMS

SoSaz7- 1. An optical information recording and reproduction apparatus, comprising:

5 medium;
a light source where a plurality of semiconductor laser chips are mounted on a surface;
optical convergence means for converging each of a plurality of laser beams radiated from each of
10 laser chips into an optical spot on said optical information medium when the optical information medium is set to said setting portion; and
tracking servo means for moving the optical convergence means in a tracking servo direction
15 perpendicular to a track direction such that the optical spot accurately scans the track of the optical information medium,
wherein the surface on which a plurality of the semiconductor laser chips are mounted is
20 substantially perpendicular to the tracking servo direction.

2. An optical information recording and reproduction apparatus that comprises: a first reflection plane that reflects the laser beams radiated
25 from each of a plurality of the semiconductor laser chips; and a second reflection plane that guides the laser beams from the first reflection plane to the optical convergence means,

wherein the first reflection plane is formed on the same plate as the mount surface for the laser chips.

3. An optical information recording and reproduction apparatus according to Claim 2,

wherein the laser beams from the first reflection plane is made to be incident from the tracking servo direction to the second reflection plane, and

- 10 a plurality of the semiconductor laser chips are arranged in an inner plane direction parallel to an optical information medium plane.

4. An optical information recording and reproduction apparatus according to Claim 2,

- 15 wherein the laser beams from the first reflection plane is made to be incident from the track direction to the second reflection plane, and

- a plurality of the semiconductor laser chips are arranged in an inner plane direction perpendicular to the optical information medium plane.

5. An optical information recording and reproduction apparatus according to Claim 1,

- wherein photodetecting elements for receiving each of a plurality of the laser beams radiated from each of the laser chips are provided on a surface where said laser chips are mounted.

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6. An optical head used in an optical information recording and reproduction apparatus that

performs tracking servo to record and reproduces information when an optical spot is radiated on an optical information medium,

wherein the optical head comprises: a light source on which each of semiconductor laser chips having a plurality of wavelengths is mounted on a surface; and optical convergence means for converging each of a plurality of laser beams radiated from each of the laser chips on said optical information medium as the optical spot, and the surface where a plurality of the semiconductor laser chips are mounted is substantially perpendicular to said tracking servo direction.

7. An optical head according to Claim 6, comprising:

a first reflection plane for reflecting the laser beam radiated from each of a plurality of the semiconductor laser chips; and

a second reflection plane for guiding the laser beam from the first reflection plane to the optical convergence means, wherein the first reflection plane is formed on a plate same as the mount surface for the laser chips.

8. An optical information recording and reproduction apparatus according to Claim 7,

wherein the laser beams from the first reflection plane is made to be incident from the tracking servo direction to the second reflection

plane, and

a plurality of the semiconductor laser chips are arranged in an inner plane direction parallel to an optical information medium plane.

5 9. An optical information recording and reproduction apparatus according to Claim 7,

wherein the laser beams from the first reflection plane is made to be incident from the track direction to the second reflection plane, and

10 a plurality of the semiconductor laser chips are arranged in an inner plane direction perpendicular to the optical information medium plane.

10. An optical information recording and reproduction apparatus according to Claim 6,

15 wherein a photodetecting element for receiving each of a plurality of the laser beams radiated from each of the laser chips is provided on a surface where said laser chips are mounted.

11. A laser module used for an optical head
20 constituting an optical information recording and reproduction apparatus, which performs tracking servo to record and reproduce the information when an optical spot is radiated on an optical information medium, and including optical convergence means for converging
25 laser beams into the optical spot on said optical information medium, the laser module, comprising:
a light source where each of semiconductor laser chips having a plurality of wavelengths is

mounted on its surface;

a photodetecting element for receiving each of a plurality of the laser beams radiated from each of the laser chips; and

5 a package for enclosing said light source and said photodetecting element, wherein the surface where a plurality of the semiconductor laser chips are mounted is substantially perpendicular to said tracking servo direction.

10 12. A laser module, comprising:

a semiconductor plate;

a mount surface for laser chips provided on the semiconductor plate;

a plurality of semiconductor laser chips
15 mounted on the mount surface for the laser chips;
a reflection plane provided on the semiconductor plate for reflecting laser beams radiated from a plurality of the semiconductor laser chips; and
a photodetecting element, which is provided

20 on the semiconductor plate, for receiving the laser beams radiated from a plurality of the semiconductor laser chips,

wherein the photodetecting elements are arranged at both sides of a plurality of the
25 semiconductor laser chips in a direction where a plurality of the semiconductor laser chips are arranged.

13. A laser module according to Claim 12,

comprising:

a package for enclosing the semiconductor plate, wherein the outline of the package in a plane perpendicular to a direction, where the laser beam is radiated from the package, has an approximate rectangular shape in a degree where its long direction and short direction can be distinguished, and a plurality of semiconductor laser chips and the photodetecting element are arranged in a direction of the short side of the package.

14. A laser module, comprising:

a semiconductor plate;
a mount surface for laser chips provided on the semiconductor plate;
a plurality of semiconductor laser chips mounted on the mount surface for the laser chips;
a reflection plane provided on the semiconductor plate for reflecting laser beams radiated from a plurality of the semiconductor laser chips; and
a photodetecting element, which is provided on the semiconductor plate, for receiving the laser beams radiated from a plurality of the semiconductor laser chips,

wherein the semiconductor plate includes a plurality of pads for electrically connecting with an external electronic circuit and a plurality of the pads are arranged along a side of the semiconductor plate parallel with a direction where a plurality of the

semiconductor laser chips are arranged.

15. A laser module according to Claim 14,
comprising:

a plurality of the lead wires for
5 electrically connecting a package for enclosing the
semiconductor plate with an external electronic
circuit, wherein the outline of the package in a plane
perpendicular to a direction, where the laser beam is
radiated from the package, has the approximate
10 rectangular shape in a degree where its long direction
and short direction can be distinguished, and a
plurality of the lead wires are arranged in a direction
of the short side of the package.